

Comments Regarding WPCF Tentative Order

Page	Section	Comment
Cover	Table 2	Discharge to the ponds is not described. Also, the “ – “ under longitude should be removed. Under latitude, the minute mark “ ’ ” needs to be added.
3	II.B	<p>“Facility Description” also needs to describe treatment and disposal in the ponds. Suggested text is as follows:</p> <p>“B. Facility Description. The Discharger owns and operates a wastewater collection, treatment, and disposal system and provides sewerage service to domestic, commercial, and industrial users of City of Woodland. The treatment system consists of headworks, secondary treatment, tertiary filtration, ultraviolet disinfection, and sludge handling. Wastewater is discharged from Discharge Point 001(see table on cover page) to the Tule Canal, a water of the United States, and a part of the Yolo Bypass within Sacramento Delta Hydrologic Unit. A portion of the wastewater is also treated and disposed in the WPCF’s pond system. Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.”</p>
9	Table 6	The Settleable Solids units should be “mL/L”. Also, per SIP, the effluent limits should be rounded to 2-place accuracy. Also, Footnote 1 should state “Mass limits apply only in months when groundwater is at or near normal and runoff is not occurring.”
9	Table 6	Something appears to be wrong with Table F-5 because the Acute ECA multiplier (0.07) and Chronic ECA multiplier (0.2) do not appear to correspond to the same CV (coefficient of variation) as shown in Table 1 of SIP, i.e., an Acute ECA multiplier of 0.07 corresponds to a CV >4, whereas a Chronic ECA multiplier of 0.2 corresponds to a CV of about 2.05. The CV for the effluent ammonia data needs to be disclosed and the ammonia effluent limitations and the associated calculations and text amended as needed. This comment affects Fact Sheet IV.C.3.e, and Fact Sheet Table F-5 and F-7.
10	IV.A.1.c	<p>The mercury mass load limit should be at least an annual average because of the long-term bioaccumulation characteristic of mercury. The origin of the 0.088 lbs/month effluent limit is a mystery. Page F-18 states “This Order carries forward Effluent Limitations for mercury. . .” which implies the basis for the 0.088 lbs/month mass limit is the current Order. Tables F-2a and F-2b state the current Order mercury limit is 0.051 µg/l on an average monthly basis. The basis for establishing the mercury mass limit at appears to be based on the City’s current average flow (0.000051 mg/L)(6.7 Mgal/day)(8.345)(31 day/month) = 0.088 lbs/month.</p> <p>Based on a previous design flow of 7.8 Mgal/d, the average monthly mass limit would have been:</p> <p>(0.000051 mg/L)(7.8 Mgal/day)(8.345)(31 day/month) = 0.10 lbs/month</p>
10	IV.B	Are any Land Discharge Specifications needed to cover wastewater disposal via the ponds?
11	V.A.8	There is no averaging period for measuring compliance with pH change, though the Fact Sheet (page F-36) states monthly averaging is included in this Order.

Page	Section	Comment
12	V.A.10.b	Subsection "b" should be deleted because it is based on drinking water MCLs which should not be applied to a non-MUN receiving water.
18	VI.C.1.c	This section refers to an "interim mass effluent limitation" on mercury. Per page 10, the mass limit on mercury is "final" not "interim".
22	VI.C.3.a	"The Pollution Prevention Plan shall be completed and submitted to the Regional Water Board within one (1) year following work plan approval by the Executive Officer , and progress reports shall be submitted in accordance with the Monitoring and Reporting Program (Attachment E, Section X.D.1.)."
23	VI.C.4.a	In the first bullet at the top of the page, is the 2.2 NTU correct, or should it be 2 NTU?
24	VI.C.4.b.vi	This section refers to Land Discharge Specification v. As written, the Order does not allow discharge to land. We are requesting that disposal via the ponds be permitted, and that in this section "Land Discharge Specification v" be changed to "Treatment Pond Operating Requirements v".
E-1	I.B/C	Change "Department of Health Services" to "Department of Public Health".
E-2	Table E-1	The latitude/longitude of Discharge Point 001 is different here than in Table 2. Also delete the "-" in front of the longitude. They should all be set to these values. 38°40'54" 121°38'42"
E-6	V.B.7	Change Table E-5a to Table E-5.
E-7	VI	Are any Land Discharge Monitoring Requirements needed to cover wastewater disposal via the ponds?
E-8	Table E-5a	Footnote 1 applies only to RSW-001. It should also apply to RSW-002 for safety as well as for the logic that without an RSW-001 measurement for comparison, an RSW-002 measurement can tell nothing about the potential impact of the discharge on the receiving water.
E-8	Table E-6	"Fixed Dissolved Solids" is a more accurate measure of salinity than EC or TDS. So that the Regional Water Board staff becomes familiar with Fixed Dissolved Solids data relative to EC and TDS, it is recommended that Fixed Dissolved Solids be added to Table E-3.
E-9	IX.A.1	UVS-001 is not located in Table E-1. As currently written, turbidity is monitored entering the UV system (page 23, first bullet at top of page) and UVT is monitoring leaving the UV system (page 23, second bullet); thus, UVS-001 is not one point, but two, as the Order is currently written. We recommend modifying the table to read:

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description (include Latitude and Longitude when available)
--	INF-001	Influent enters the headworks
001	EFF-001	Treated Effluent discharge into Tule Canal 38°, 40', 54" N, 121 °, 38', 42" W
	UVS-001	Influent to UV Channels for all parameters except for UVT which is sampled at the effluent of the UV channel
--	RSW-001	Tule Canal, 800 feet upstream from the point of discharges
--	RSW-002	Tule Canal, 1800 feet downstream from the point of discharge
	GW-00(n)	Groundwater monitoring network

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E-9	IX.B.1	BIO-001 is not located in Table E-1.
E-10	IX.C.1	SPL-001 is not located in Table E-1.
E-10	IX.D.1	The Monitoring Location should be each pond so that levee conditions are noted and odors are noted in ponds that are either wet or dry.
F-5	II.A.4	"lame modules" needs to be changed to "lamp modules".
F-5	II.B.2	The latitude/longitude needs to agree with Table 2 and Table E-1. They should all be set to these values: 38°40'54" 121°38'42"
F-7	Table F-2b	Table alignment is off.
F-9	III.C.4	The second paragraph says that the effluent has reasonable potential to cause or contribute to exceedances of WQOs for copper, cyanide, mercury, selenium, ammonia, and boron. The Findings (e.g., II.G) state that effluent limitations will be established for all effluent pollutants having reasonable potential. There are no effluent limitations for copper or cyanide; thus, there is inconsistency within the Order, as written. We suggest deleting copper and cyanide from page F-9, III.C.4.
F-12	IV.B.2.b	Add "mgd" to the end of the sentence following "10.4".
F-15	IV.C.3.b	III.C.4 states that there is reasonable potential for mercury, selenium, ammonia, and boron (excluding copper and cyanide which no longer appear to be appropriate). IV.C.3.b should be consistent with III.C.4.
F-17	IV.C.3.e	"An interim performance-based maximum daily effluent limitation of 3.7 mg/L has been established in this Order. The interim limitation was determined as described in Attachment F, Section IV.E.3., and is in effect through May 17, 2010. "
F-25	Tables F-5 and F-6	The CVs and "n" values used to calculate these limitations should be disclosed with either equations or references to SIP Tables 1 and 2 so that a reviewer can understand where these multipliers come from. As noted previously, F-5 appears to contain inconsistencies related to CV and/or n.
F-28	IV.D.2	Top line on page: "copper" and "dissolved oxygen" need to be deleted because there is no max day effluent limitation for either parameter. "turbidity" needs to be deleted from the following line on the page because there is no effluent limitation on turbidity.
F-29	IV.D.3	In the last sentence of the section, change "disinfections" to "disinfection".
F-30	IV.D.4.a.ii	In the first sentence of the third paragraph of this section, "implacts" changes to "impacts" and "volume in increased" changes to "volume is increased".
F-32	Table F-8	There are several errors under "Units". <ul style="list-style-type: none"> Change Mg/L to mg/L (several places) Change Ug/L to µg/l Change MI/L to mL/L Also, the limits should have 2-place accuracy per SIP.
F-34	IV.F	Are any Land Discharge Specifications needed to continue disposal from the ponds?
F-34	V.	The Rationale for Receiving Water Limitations seems to invoke drinking water MCLs when the Tule Canal does not have an MUN beneficial use (see page 5, Table 5). If "narrative objectives" invoke any and all standards developed to protect human health from drinking the water, then all waters have defacto MUN beneficial use designation, and MUN not being listed as a beneficial use in the Basin Plan appears to mean nothing. This apparent inconsistency needs to be explained, or inclusion of drinking water standards in this Order needs to be deleted.

Page	Section	Comment
F-36	V.A.1.j	Radioactivity limitations based on MCLs should be deleted for this non-MUN receiving water.
F-40	VI.D.2.b	This subsection states "this Order contains Groundwater Limitations that allow groundwater quality to be degraded for certain constituents when compared to background groundwater quality". That is not what the Groundwater Limitations section says; therefore, these parts of the Order are inconsistent.
F-41	VII.B.1.a	Change "Discharger prepare" to "Discharger to prepare". Also, the Order requires pollution prevention plans for ammonia and selenium; therefore, reference to boron, copper, cyanide and mercury should be deleted from this section.
F-42	VII.B.2.a	<p>The City has provided detailed comments (below) concerning the provisions related to the Investigative TRE Work Plan and proposed numeric toxicity monitoring trigger for effluent dominated discharges such as Tule Canal.</p> <p>The City believes that IC25 is a more dependable approximation of the no effect level for the receiving water and a better indication of the ability to see an effect in the toxicity test compared to the trigger of >1 TUc (based on an NOEC). The City requests that the numeric monitoring trigger be modified as follows:</p> <p style="text-align: center;">Numeric Monitoring Trigger. The numeric toxicity monitoring trigger is > 1 TUc (where TUc = 400/NOEC <u>100/IC25</u>).</p>
F-42	VII.B.2.a	The City has collected over 7 years of EC data of the effluent and R1 and R2. The data indicate dilution exists in Tule Canal, although it has never been measured directly or quantified using constituents like EC. The City requests that the implementation of the special study be delayed for 1 year, October 24, 2009, until a dilution study can be completed to determine the appropriate critical effluent–receiving water mixing ratio. The City proposes to complete and submit a workplan for the dilution study within 90 days of adoption to assess whether quantifying dilution is feasible in Tule Canal. If proving dilution was considered not feasible or the existing data suggests no dilution is available, the City would submit the required TRE Work Plan within 90 days of that determination.
F-42	VII.B.2.a	<p>p. E-5, Chronic Toxicity Methods. EPA's <i>Method Guidance and Recommendations for Whole Effluent Toxicity (WET) Testing</i> (40 CFR Part 136) (821-B-00-004) (USEPA 2000) provides guidance on hypothesis testing when sublethal endpoints are measured or no dilution credit is allowed due to low flow in receiving water. Thus, the City requests the following clarification be added in the MRP, if the monitoring trigger remains based on a hypothesis test (i.e., NOEC rather than a point estimate):</p> <p style="margin-left: 40px;">5. <i>Methods</i> – The presence of chronic toxicity shall be estimated as specified in <i>Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition</i>, EPA/821-R-02-013, October 2002. <u>The alpha level for chronic WET bioassays may be 0.01 provided that, should the percent minimum significant difference (PMSD) not exceed the recommended PMSD for test sensitivity in the Test Method, the results should be reported using the standard alpha of 0.05."</u></p>

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		<p>p. E-6, Item 7, Dilutions and Table E-4. The dilution series is not necessary during routine monitoring to assess whether the monitoring trigger has been exceeded. However, evaluation of the dose-response curve is particularly relevant when a toxicity reduction evaluation (TRE) may be initiated based on the results (i.e. during accelerated monitoring) and to determine if the toxicity present is of sufficient magnitude for a TIE study to be practicable.</p> <p>Thus, the City requests the following modifications as found in other recently adopted permits (i.e., Order No. R5-2008-0055):</p> <p style="padding-left: 40px;">7. <u>Dilutions</u> – For regular chronic toxicity testing it is not necessary to perform the test using a dilution series. The test may be performed using 100% effluent. For accelerated and/or TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-5, below. The receiving water control shall be used as the diluent (unless the receiving water is toxic).</p>
F-43	VII.B.2.a	“Figure F-X” should read “Figure F-3” to be consistent with page F-45. However, there appears to be no Figure F-1 or F-2; therefore both pages F-43 and F-45 possibly should read “Figure F-1”.
F-46	VII.B.3.b	There is not subsection “i”; the subsections start at “ii”.
F-47	VII.B.4.a	<p>In the first sentence of the second paragraph, change “compliance effluent” to “compliance with effluent”.</p> <p>Also, this section refers to 2 NTU, not the 2.2 NTU noted on page 23 (VI.C.4.a).</p>
F-48	VII.B.4.a	“The Discharger submitted a request, and justification, within 90 days of the effective date of this Order, for a compliance schedule for ammonia. The compliance schedule justification included all items specified in Paragraph 3, items (a) through (d), of Section 2.1 of the SIP. This Order establishes a compliance schedule for the new, final, water quality-based effluent limitations for ammonia and requires full compliance by May 18th, 2010 ”
F-49	VII.B.	Written comments should be delivered to the Regional Board by 5:00 p.m. on 6 Oct 2008, not 30 Sept 2008 per the Notice of Public Hearing.

DISCUSSION REGARDING HOW THE NUMERIC TOXICITY MONITORING TRIGGER IS APPLIED TO THE DISCHARGE

These comments apply to the required actions to reduce or eliminate effluent toxicity and the Order’s proposed toxicity numeric monitoring trigger (*P. 19, item 2.a.iii. Numeric Monitoring Trigger*).

There are at least four critical elements concerning aquatic life toxicity: 1) persistence; 2) magnitude; 3) effect; and 4) stability. Persistence is addressed in the Tentative Order through a combination of routine and accelerated monitoring tests (i.e., 4 tests every 2 weeks). The magnitude of the toxicity is addressed as the minimum effluent percentage with a toxic response for receiving water and effluent mixtures. For this, at times, effluent dominated waterbody, the available dilution is uncertain and the default monitoring trigger is any effect at 100% effluent. Such an approach, without acknowledging available dilution during discharge, addresses the potential impact rather than determining a known or even likely impact occurring with the discharge.

In addition, as the practical biological effect on aquatic life is not defined, the utility of the monitoring results is further hampered. For instance, it is unknown whether the discharge has resulted in statistically significant differences between upstream and downstream conditions. Nor is it known whether such differences cause harm to aquatic life present. A common result is that a reduction as small as 10–15% relative to receiving water can trigger a toxicity reduction evaluation (TRE). Knowing that the bioassay test organisms have not been acclimatized to the receiving water or effluent–receiving water mixtures, it is extremely unlikely that such a small difference results in meaningful toxicity to aquatic life at the discharge location.

The final element of toxicity is stability. Since the chronic toxicity bioassays are typically performed using renewals, the bioassay results reasonably capture the continuous discharge condition. However, apparent toxicity in municipal effluents is often variable in occurrence and stability such that a refrigerated sample often shows no toxicity a week later. These attributes further limit the ability of the City to use techniques such as toxicity identification evaluations (TIEs) in determining a cause for the bioassay results since the apparent toxicity degrades during investigation.

In conclusion, the City will likely be faced, as other municipal effluent dischargers have already found themselves, with a regulatory requirement to determine the cause of bioassay results that do not have a strong basis in indicating significant adverse impacts to aquatic life at the discharge location. In addition, the investigative options available (e.g. TIEs) have proved to be extremely unsuccessful if apparent toxicity is very low (<2 TUC), and such techniques are further limited when: 1) small adverse effects (i.e., 10–15% reduction) are detected in bioassays at such low levels (i.e., <2 TUC); 2) such effect levels may not occur in all bioassay tests; and 3) the effect is not persistent over time. The result is that significant time and resources are spent that are unlikely to result in useful knowledge of the cause of the bioassay results; bioassay results which have limited real world significance for aquatic life at the discharge location.

Thus, the City finds a trigger of >1 TUC (based on an NOEC) to be overly sensitive whereby the statistical trigger can be exceeded yet the potential for an effect to aquatic life in the receiving water is unlikely or uncertain (i.e., the practical biological effect). While the City believes the whole effluent toxicity (WET) testing can be an effective screening tool for further investigation of potential adverse receiving water toxicity impacts from effluent discharge, demonstration of toxicity in laboratory testing is not synonymous with toxicity at the discharge location with variable temperature, flow, suspended solids, organic matter, ultraviolet light irradiance, and the presence of reactive minerals (i.e., iron and manganese oxides). In short, there are many real world site-specific characteristics that define and determine the quality of the aquatic life habitat. Thus, equating toxicity in WET testing with demonstrated adverse impacts in the receiving water is overly restrictive and there is room for the Regional Water Board to acknowledge the inherent challenges that arise when investigating WET toxicity.

The City believes that IC₂₅ is a more dependable approximation of the no effect level for the receiving water and a better indication of the ability to see an effect in the toxicity test. This perspective is supported by USEPA. USEPA has consistently recommended the use of point estimates (e.g., IC₂₅) rather than hypothesis tests to analyze whole effluent toxicity data since the issuance of the *Technical Support Document for Water Quality-based Toxics Control* in 1991. (TSD, EPA/505/2-90/001, page 6). The EPA's test methods manuals have consistently recommended the use of a point estimate method rather than the hypothesis method for the NPDES program. **“NOTE: For the NPDES Permit Program, the point estimation**

techniques are the preferred statistical methods in calculating end points for effluent toxicity tests.” [original emphasis] (USEPA 2002, *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*. 821–R-02-013). Furthermore, when using the point estimate approach, the test methods manual advises that: “*Thus the assessment of a "safe" concentration must be made from a biological standpoint rather than with a statistical test. In this instance, the biologist must determine some amount of adverse effect that is deemed to be "safe", in the sense that from a practical biological viewpoint it will not affect the normal propagation of fish and other aquatic life in receiving waters.*”(USEPA 2002).